

REMARKS

Claims 1, 4-7, 9-13 and 16-25 are pending in the application.

Claims 1, 4-7, 9-13 and 16-25 have been rejected.

Claims 1, 7, and 13 have been amended as set forth herein.

Claims 11 and 12 have been canceled herein, without prejudice.

Claims 1, 4-7, 9, 10, 12, 13, and 16-25 remain pending in this application.

Reconsideration of the claims is respectfully requested.

I. **REJECTIONS UNDER 35 U.S.C. § 103**

Claims 1, 4-7, 9-13 and 16-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,677,927 to Fullerton (hereinafter “*Fullerton*”) in view of U.S. Patent Publication No. 2004/0141567 to Yang et al. (hereinafter “*Yang*”). The Applicants respectfully traverse the rejection.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142; *In re Fritch*, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to

modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. MPEP § 2142. In making a rejection, the examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), viz., (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. In addition to these factual determinations, the examiner must also provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (*In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir 2006) (cited with approval in *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007))).

Claim 1 (as amended) recites a communications receiver comprising a pulse detection unit configured to detect pulses in a received signal that includes:

- a plurality of comparators;
- a signal processor;
- a sampling time generator configured to generate timing signals indicative of a plurality of sampling time points within a received pulse; and
- a reference level generator configured to generate a plurality of reference levels,

wherein each of the comparators is programmable with a sampling time point selected from said plurality of sampling time points and with a reference level selected from said plurality of reference levels, and

wherein the received signal is applied to each of the comparators such that each of the comparators is configured to produce a respective output signal based on a comparison between the received signal level and the selected reference level at the selected sampling time point,

wherein the signal processor is configured to detect pulses in the received signal based on the output signals from the comparators and adapted to program the comparators with respective selected sampling time points and reference levels, in order to detect said pulses; and

wherein each of the sampling time points and reference levels are individually selected according to an expected shape, amplitude, or arrival time of said pulses. [Emphasis Added].

In rejecting dependent Claim 11, the Office Action asserts that Figures 1s and 15 of *Fullerton* teach programming the comparators with respective selected sampling time points and reference

levels, based about the possible shapes of said pulses. (Office Action, page 6). Applicants respectfully disagree. Applicants submit that there exists no Figure 1s in *Fullerton*. Applicants will presume that the Office Action refers to Figures 1A and 1B. Figures 1A and 1B and their associated description only teach Gaussian monocycle pulses that may be used with impulse radio technology. (*Fullerton*, column 8, lines 23-30). Additionally, Figure 15 and its associated description only teaches that the receive antenna has an inherent characteristic that causes the resulting electrical waveform at its output to have the shape of pulse. (*Fullerton*, column 16, lines 63-65). Furthermore, there exists no teaching or suggestion within the entirety of *Fullerton* to individually select sampling time points and reference levels according to an expected shape of the pulses as recited in independent Claim 1.

In contrast to the teachings of *Fullerton*, Applicants' disclosure teaches, *inter alia*, selecting sampling time points and reference levels individually according to an expected shape, amplitude, or arrival time of received pulses. For example, paragraphs [0049], [0054], and [0055] of the specification as filed are reproduced below:

[0049] The reference level and the sampling point programmed in each comparator can be chosen using any available knowledge about the expected pulse, for example concerning its expected amplitude or arrival time, and about the possible forms of pulse modulation. The available information will differ, depending on whether the receiver is used in a signaling communication system, or a radar or positioning system.

[0054] In step 64, optimal threshold values and sampling points are determined. Knowledge about the modulation scheme, that is, about the shapes of the pulses which are transmitted, allows the selection of threshold values and sampling points which can distinguish between the possible transmitted pulse shapes with the required high probability. For example, in the case of the pulses 30, 32 shown in FIG. 2, the signal magnitude at time T11 will be lower than L3 irrespective of which of the two pulses is being received in the time period (T1,T2). Therefore, the combination of the threshold value L3 and the sampling point T11 would not be selected, because it would not help to distinguish between the two possible transmitted pulse shapes.

[0055] Each of the available sampling points may be programmed into one or more of the latches. A sampling point may be programmed into more than one of the latches, in combination with different threshold values, although the degree of loading of the timing position generator places a limit on the maximum number of latches which can be programmed with a single time sampling point.

As shown, the reference level and sampling time point of each comparator using any available

knowledge about the expected pulse. As further shown, the selection of a particular reference level and sampling time point of one particular comparator may be substantially independent of the selection of a reference level and sampling time point of another comparator.

In rejecting dependent Claim 12, the Office Action asserts that *Fullerton* teaches programming the comparators with respective selected sampling time points and reference levels, based on knowledge about the expected arrival times of said pulses. (*Id.*) Specifically, the Office Action asserts that *Fullerton* teaches a control loop comprising a lowpass filter used to generate an error signal to provide minor phase adjustments to the adjustable time base to time position the periodic timing signal in relation to the position of the received signal, and that this asserted disclosure of *Fullerton* teaches the features of dependent Claim 12. Again, Applicants respectfully disagree. Without conceding the propriety of the asserted teaching of *Fullerton*, the control loop may provide minor phase adjustments, but it does not individually select sampling time points and reference levels of comparators about the expected arrival times of received pulses. Thus, *Fullerton*, does not teach or suggest “each of the sampling time points and reference levels are individually selected according to an expected arrival time of said pulses” as recited in independent Claim 1.

For at least these reasons, Claim 1 and its dependent claims are patentable. Independent Claims 7 and 13 have been amended to recited features similar to those discussed above with respect to independent Claim 1. Therefore, independent Claims 7 and 13, along with their dependent claims are also patentable. Accordingly, Applicants respectfully request that the § 103 rejection be withdrawn.

II. CONCLUSION

As a result of the foregoing, the Applicant asserts that the remaining Claims in the Application are in condition for allowance, and respectfully requests an early allowance of such Claims.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicants respectfully invite the Examiner to contact the undersigned at the telephone number indicated below or at *rmccutcheon@munckcarter.com*.

The Commissioner is hereby authorized to charge \$490.00 for a two (2) month extension fee and any additional fees (including any extension of time fees) connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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